

REMARKS

In the Office Action, claims 1-27 are rejected. By the present Response, claims 1, 15, 26 and 27 have been amended. No new matter has been added. Upon entry of the amendments, claims 1-27 will be pending in the present patent application. Reconsideration and allowance of all pending claims are requested.

Rejections Under 35 U.S.C. §102

Claims 1-6, 14-15, 16-20 and 26-27 were rejected under 35 U.S.C. §102 (b) as being anticipated by Giger et al. (U.S. Patent No. 5,984,870, hereinafter "Giger").

Claim 1 and Claims Depending Therefrom

Claim 1 recites an automated method for determining a plurality of characteristics of a breast lesion. The method comprises automatically identifying a region of interest in an image, the region of interest comprising the breast lesion, preprocessing the region of interest to enhance a quality of the image, automatically segmenting the breast lesion in the preprocessed region of interest. The method further includes automatically measuring a plurality of measurements for determining the plurality of characteristics of the breast lesion and automatically classifying the breast lesion as benign or malignant based on the plurality of measurements.

Claim 15 and Claims Depending Therefrom

Claim 15 recites a system for determining a plurality of characteristics of a breast lesion. The system comprises a memory unit configured for storing an image and a processor configured for automatically identifying a region of interest in the image, the region of interest comprising the breast lesion. The processor is further configured for preprocessing the region of interest to enhance a quality of the image; automatically segmenting the breast lesion in the preprocessed region of interest; automatically measuring a plurality of measurements for determining the plurality of characteristics of the breast

lesion; and automatically classifying the breast lesion as benign or malignant based on the plurality of measurements.

Claim 26 and Claims Depending Therefrom

Claim 26 recites a computer-readable medium storing computer instructions for instructing a computer system to determine a plurality of characteristics of a breast lesion. The computer instructions include automatically identifying a region of interest in an image, the region of interest comprising the breast lesion, preprocessing the region of interest to enhance a quality of the image, automatically segmenting the breast lesion in the preprocessed region of interest, automatically measuring a plurality of measurements for determining the plurality of characteristics of the breast lesion and automatically classifying the breast lesion as benign or malignant based on the plurality of measurements.

Claim 27 and Claims Depending Therefrom

Claim 27 recites a system for determining a plurality of characteristics of a breast lesion. The system comprises means for automatically identifying a region of interest in an image, the region of interest comprising the breast lesion, means for preprocessing the region of interest to enhance a quality of the image, means for automatically segmenting the breast lesion in the preprocessed region of interest, means for automatically measuring a plurality of measurements for determining the plurality of characteristics of the breast lesion and means for automatically classifying the breast lesion as benign or malignant based on the plurality of measurements.

Giger fails to disclose automatically segmenting the breast lesion in the preprocessed region of interest.

The Examiner analogized an FFT operation in Giger to the recited “preprocessing” step. However, Applicants respectfully submit that Giger fails to disclose automatically *segmenting the breast lesion in a preprocessed region of interest*. Giger instead teaches passing image data first through a lesion locator and then passing

the image data to a region of interest placement circuit followed by a lesion extractor circuit. *Only after* these steps are performed does the system pass the data through the FFT circuit. *See*, FIG. 15, and column 11, lines 11-15. Clearly, even if the FFT operation were considered “preprocessing”, Giger’s “preprocessing” occurs *after* locating the lesion, determining a region of interest and extracting the lesion. Giger does not perform the segmentation on the preprocessed image as recited in claims 1, 15, 26 and 27 (the “extraction” performed by Giger is assumed, for the purpose of argument, to be the only process akin to segmentation). In the pending independent claims, as amended, the image is first preprocessed (e.g., to enhance its quality using various techniques such as applying edge smoothening filter or using a fuzzy enhancement technique). The segmentation of the breast lesion is performed *after* preprocessing the image. *See*, Application, Fig. 2, page 8, lines 22-31.

At least because Giger fails to disclose automatically segmenting the breast lesion in the preprocessed region of interest, the reference cannot support a *prima facie* case of anticipation of claims 1, 15, 26 and 27. Accordingly, Applicants respectfully submit that independent claims 1, 15, 26 and 27 and claims depending therefrom are allowable, and respectfully request the Examiner to reconsider and withdraw the rejection of the claims.

Rejections Under 35 U.S.C. §103

Claims 7-10 and 21-24 were rejected under 35 U.S.C. §103 (a) as being unpatentable over Giger in view Kuhn (U.S. Patent No. 5,982,916). Claims 11 and 13 were rejected under 35 U.S.C. §103 (a) as being unpatentable over Giger in view Gaborski et al. (U.S. Patent No. 5,857,030). Claim 12 has rejected under 35 U.S.C. §103 (a) as being unpatentable over Giger in view Li et al. (U.S. Patent No. 6,654,728).

The claims rejected under this section depend indirectly from independent claims 1 and 15. As summarized above, Giger is not believed to teach, suggest or disclose each and every element of independent claims 1 and 15. Consequently, claims 7-13 and 21-24

are believed to be patentable both by virtue of their dependency from an allowable base claim, as well as for the subject matter they separately recite. Reconsideration and allowance of dependent claims 7-13 and 21-24 on this basis are requested.

Conclusion

In view of the remarks and amendments set forth above, Applicants respectfully request allowance of the pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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PS
Patrick S. Yoder
Reg. No. 37,479
FLETCHER YODER
P.O. Box 692289
Houston, TX 77269-2289
(281) 970-4545